MPUC Docket No. E-6472-/M-05-1993
OAH Docket No. 12-2500-17260-2

BEFORE THE
MINNESOTA OFFICE OF ADMINISTRATIVE HEARINGS
100 Washington Square, Suite 1700
Minneapolis, Minnesota 55401-2138

FOR THE
MINNESOTA PUBLIC UTILITIES COMMISSION
127 7th Place East, Suite 350
St. Paul, Minnesota 55101-2147

In the Matter of the Petition of Excelsior Energy Inc. and Its Wholly-Owned Subsidiary MEP-I, LLC For Approval of Terms and Conditions For The Sale of Power From Its Innovative Energy Project Using Clean Energy Technology Under Minn. Stat. § 216B.1694 and a Determination That the Clean Energy Technology Is Or Is Likely To Be a Least-Cost Alternative Under Minn. Stat. § 216B.1693

PREPARED SURREBUTTAL TESTIMONY OF

EXCELSIOR ENERGY INC. AND MEP-I LLC

EDWARD C. BODMER

OCTOBER 31, 2006

EXCELSIOR ENERGY, INC.

BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

PREPARED SURREBUTTAL TESTIMONY OF

EDWARD C. BODMER

I. INTRODUCTION AND QUALIFICATIONS

Q Please state your name and business address.

A My name is Edward C. Bodmer. My business address is 5951 Oakwood Drive, Lisle, Illinois, 60532.

Q On whose behalf are you testifying?

A I am testifying on behalf of MEP-I LLC and Excelsior Energy Inc. (collectively "Excelsior"), the developers of the Mesaba Energy Project ("Mesaba" or the "Project").

Q Have you testified previously in this proceeding?

A Yes. I submitted pre-filed rebuttal testimony on October 10, 2006. I presented my qualifications in that testimony.

II. PURPOSE OF SURREBUTTAL TESTIMONY

Q What is the purpose of your surrebuttal testimony?

A The purpose of this testimony is to comment on the analysis presented in the rebuttal testimony presented by Dr. Eilon Amit on behalf of the Minnesota Department of Commerce.

Q What are your principal conclusions regarding the rebuttal testimony of Dr. Amit?

A I find that Dr. Amit is incorrect when he concludes "Excelsior's proposed IGCC … does not meet the provisions of Minn. Stat. 216B.1693 as being likely to be least-cost resource." In my rebuttal testimony, I demonstrated that the conclusions in Dr. Amit's direct testimony were incorrect and my review of his rebuttal testimony shows that his newest analysis is consistent with the earlier analysis. While acknowledging that Dr. Amit had not yet received my rebuttal testimony filed on October 10 when he presented his rebuttal testimony, I will highlight again, the weaknesses of Dr. Amit's approach. The over-riding problem in Dr. Amit's rebuttal testimony is that he loses sight of a very basic principle in finance—you cannot legitimately compare projects with different risks without making adjustments to the costs that appropriately reflect those risks. As he did in his earlier testimony, Dr. Amit makes inappropriate comparisons of prices in the Mesaba PPA with estimated all-in, year by year plant costs provided to him by NSP and with the results of an analysis prepared by consultants for some of the owners of the Big Stone II plant. The main problem with Dr. Amit's analysis is that he does not examine the underlying source data or acknowledge the uncertainty in the annual cost per MWH estimates that he uses as a basis for comparison with Mesaba. Specifically:

- Dr. Amit again compares Mesaba PPA prices with the costs presented in justifying the Big Stone II plant, even though the Big Stone II numbers used different economic assumptions than those used in the Mesaba PPA, even though the Big Stone II is the second plant at an existing site, even though the prospective owners of the Big Stone plant presented

contradictory analyses and even though the Big Stone cost estimates exclude many allocated costs that must be accounted for in the Mesaba PPA prices.

- In his rebuttal testimony, Dr. Amit again compares Mesaba PPA prices with annual cost per MWH estimates for a conventional coal plant that were provided by NSP. These costs are insufficient, as a mathematical matter, to cover the costs of a coal plant, even using the low capital cost assumptions made by the Energy Information Agency ("EIA") that are the basis of NSP's resource planning analysis. Furthermore, the NSP cost estimates do not include any consideration for the differences in ratepayer risk between prices that are generally known in a PPA and uncertain prices in a utility self-build scenario.
- Dr. Amit further distorts the comparison of Mesaba with the other plants through his analysis of transmission costs for plants that have second unit synergies—Big Stone and Sherco—are compared to the first Mesaba unit.
- Dr. Amit improperly analyzes the impact of Mesaba's ability to run on natural gas. His analysis does not reflect the revised contract terms and he does not recognize that natural gas back-up is a benefit of the Mesaba plant relative to other coal units.
- Dr. Amit's suggestions to de-link the energy charge with actual energy cost creates deadweight economic losses that would be ultimately borne by ratepayers. His recommendation would purposely cause uneconomic

dispatch and it would increase the tariff under the PPA without providing ratepayers a corresponding economic benefit.

- Dr. Amit is incorrect in his position that fixing operation and maintenance ("O&M") cost in nominal rather than real terms would benefit ratepayers.
- Dr. Amit's presentation of the Mesaba Plant assuming a PPA of 450 MW rather than 603 MW is not relevant in determining least cost resources since the 603 MW option has a lower risk adjusted cost than other alternatives.

Q Please summarize the overall conclusion from this testimony and your earlier testimony with respect to the cost of Mesaba to ratepayers relative to the cost of Big Stone II, a new plant built using assumptions from NSP's resource plan and estimated new plant costs made by Fluor

A The table below shows that the 603 MW alternative from Mesaba is the least cost resource when measured using real average cost per MWH and Mesaba's advantage widens when considering risk adjusted present value of revenues per MWH of the alternatives; the 598 MW alternative on the East Range site, although slightly more expensive, also provides a relatively low cost option, as compared to the conventional coal alternatives.

		West Range 603 MW	East Range 598 MW	West Range 450 MW	East Range 450 MW	Big Stone II Corrected	Sherco Corrected	Fluor
Real Price ($/MWH)		63.75	68.74	80.30	85.71	65.45	64.67	59.73
Levelized Real Price ($/MWH)		65.14	70.07	82.23	87.63	66.82	65.89	66.11
Nominal Price ($/MWH)		100.88	108.89	126.94	135.58	103.01	101.88	92.21
Levelized Nominal Price ($/MWH)		94.47	101.61	119.25	127.08	96.31	94.97	97.67
PV of Revenue/Generation ($/MWH)	Risk Premium							
	0.0%	42.59	42.43	49.80	49.80	44.58	43.96	45.21
	1.0%	39.12	38.61	45.34	45.34	44.58	43.96	45.21
	2.0%	36.10	35.29	41.47	41.47	44.58	43.96	45.21
	3.0%	33.45	32.39	38.10	38.10	44.58	43.96	45.21

Q What analysis have you prepared in developing these conclusions about Dr. Amit's rebuttal testimony?

A My conclusions come from the analysis I presented in my own rebuttal testimony and through applying general economic principles to evaluate the risk differences between a PPA contract and a utility financed plant. I also have prepared an analysis of the risk differential that should be applied to a PPA contract relative to a plant that exposes ratepayers to construction, operation and availability risks. In presenting this analysis I use the cost per MWH numbers applied by Dr. Amit in his rebuttal testimony that in turn were derived from plant data used by NSP in its resource planning and supposedly represent the cost of a new unit at the Sherco site. My testimony demonstrates that the numbers used by Dr. Amit do not in fact cover the cost of a pulverized coal plant if it would be built at costs that NSP uses in its resource planning and that, when properly calculated, Mesaba is the least cost resource. Further, once the analysis is appropriately adjusted for risk, the Mesaba PPA an even greater cost advantage compared to the generic NSP coal plant, the Big Stone II plant or the pulverized coal plant built using the Fluor analysis.

III. DR. AMIT'S USE OF SHERCO COST DATA FROM NSP

Q In his rebuttal testimony Dr. Amit compares prices in the Mesaba PPA to cost per MWH numbers provided by NSP that supposedly represent the cost of a hypothetical new unit at the Sherco site. Is this comparison valid?

A No. There are a number of problems with the comparison of prices in a PPA contract and the estimated costs for a hypothetical new unit that make the comparison inappropriate for purposes of determining whether Mesaba is a least cost resource. Four of the major problems with Dr. Amit's comparison in his rebuttal testimony include:

1. The Sherco cost per MWH estimates provided by NSP are not prices from a negotiated contract as are the Mesaba PPA prices, but are preliminary estimates which are not supported by the testimony of any party.

2. The Sherco cost per MWH estimates provided by NSP are not consistent with the Energy Information Agency ("EIA") new coal plant data that NSP uses in its resource planning. This material inconsistency calls into question not only Dr. Amit's analysis which relies on the information provided to him by NSP, but also NSP's own analysis.

3. The Sherco cost per MWH estimates provided by NSP are even less consistent with EIA information once the recent increases in plant construction cost are included in the analysis.

4. The cost per MWH numbers provided by NSP do not account for the differential ratepayer risk between a PPA contract and a self-built plant financed on the balance sheet of a utility company.

Q Have you adjusted the hypothetical Sherco cost per MWH estimates used by Dr. Amit in his rebuttal testimony so that they are relevant for comparison with the Mesaba PPA?

A Yes. I have reviewed the underlying EIA source data used by NSP in its resource planning and then adjusted the annual cost per MWH data provided by NSP in the following ways:

- First, I have computed the net cash flows that would result if the NSP annual cost per MWH estimates reflected the revenues actually received by the plantand the plant then incurred costs corresponding to the EIA coal plant cost data.
- Second, I have corrected the annual cost per MWH numbers provided by NSP so that the costs would provide a rate of return to investors consistent with the Big Stone II analysis discussed in my rebuttal testimony.
- Third, I have corrected the cost per MWH numbers provided to Dr. Amit by NSP so that they would take account of recent cost increases that have been experienced for construction of coal plants.
- Fourth, I have computed the value of the hypothetical self-build utility plant relative to the Mesaba PPA where risk differences are considered through adjusting the discount rate.

Q What does corrected analysis of the Sherco numbers used by Dr. Amit in his rebuttal testimony demonstrate?

A My analysis demonstrates that even before accounting for risk differences between a plant financed with a PPA and a self-build plant financed on the

balance sheet of a utility company, the ratepayer cost of a hypothetical plant based on EIA data is similar to prices in the Mesaba PPA. The corrected real average cost of the hypothetical coal unit derived from EIA data is $64.67/MWH compared to the average real cost of $63.75/MWH for the Mesaba PPA. This comparison, however, does not account for the differences in ratepayer risk between a utility financed plant and a plant that allocates risk through a PPA contract. The risk benefits of the Mesaba PPA relative to the construction cost over-run risks, the construction delay risks, the plant performance risk, the plant availability risks, the operating and maintenance risks and the risks of changes in cost of capital that exist with a utility financed plant imply that Mesaba PPA has a 10% - 24% lower cost to ratepayers than the hypothetical coal plant that built with assuming parameters from the EIA.

Q What data have you used in evaluating whether the Sherco cost per MWH numbers used by Dr. Amit in his rebuttal testimony in fact represent the cost of a pulverized coal plant beginning operation in October 2011 using EIA data as a basis for the underlying costs?

A I have created a financial model similar to the model I developed in my rebuttal testimony for Big Stone II. I use this model to evaluate whether the numbers provided by NSP to Dr. Amit in fact represent the cost of a new scrubbed coal plant that would be constructed at costs estimated by the EIA. The cost inputs I have used in the model include:

- An overnight cost of $1,213/kW in 2004 dollars per EIA documents adjusted upward by 15.5% as described in NSP's resource plan.[1] This cost

[1] The EIA source documents and the Xcel adjustments were described in my rebuttal testimony.

estimate is then inflated to represent a plant that would begin operation in October 2011.

- A heat rate of 9,505 BTU/kWh, which is 12% greater than the EIA heat rate of 8,844 BTU/kWh as documented in the NSP resource plan.

- Fixed operating and maintenance expenses of $24.36/kW/Year in 2004 dollars from the EIA which are escalated to $29.56/kW/Year to October 2011.

- Variable O&M per MWH of $4.06/MWH in 2004 dollars which are escalated to $4.93/MWH to represent the October 2011 dollars.

- Fuel cost of $1.42/MMBTU used in the Fluor analysis which is consistent with the coal price assumptions in the Mesaba energy charge.

- Fuel cost escalation of 2.5% consistent with the energy charge assumptions in the Mesaba PPA.

- An 80% capacity factor assumption documented in the NSP resource plan and in its limited description of the Sherco cost per MWH numbers.

- Income tax rate of 43% which reflects Minnesota State and Federal taxes.

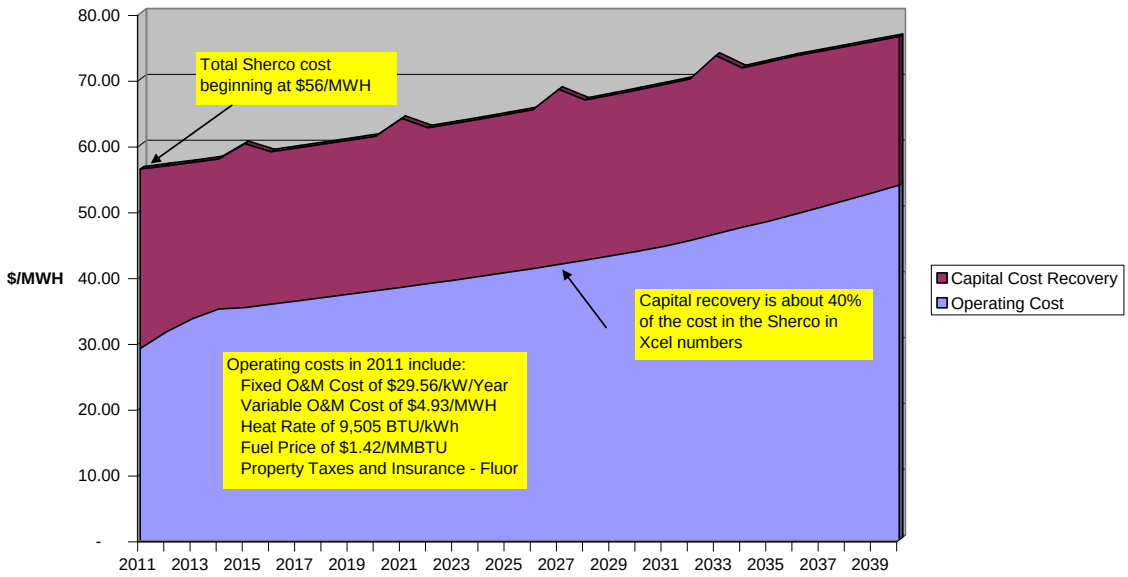
- Interest rate of 7.5% and a capital structure of 50% debt and 50% equity used by Burns and McDonald in the Big Stone Analysis.

Q When you input the EIA cost data into a financial model together with the costs per MWH used by Dr. Amit, how much cash flow is available for covering capital costs?

A In the numbers provided to Dr. Amit by NSP, the cost per MWH for Sherco begins at $56.3/MWH and grows at about 1% per year.[2] Using the EIA cost information, the operating costs including fuel cost, variable O&M and property and insurance sum to $28.87/MWH and escalate at a bit more than 2%. This leaves $27.43/MWH for covering the capital costs associated with the new plant—the income taxes as well as the payments to debt and equity investors. The

cost per MWH for capital recovery and for operating expense is shown on the graph below:

Sherco Operating and Capital Recovery per MWH



Q Do the capital cost recovery numbers implicit in the above chart cover the total costs of a new coal plant?

A No. The capital costs for a coal plant are generally estimated to be about 60% of the total cost of the plant—much more than the 40% shown in the graph above. To assess whether the NSP numbers cover the total costs of a plant, I have used the financing assumptions applied by Burns and McDonnell in their analysis of the Big Stone II unit that I described in my rebuttal testimony. If the overnight cost of the plant was $1,616/kW per the adjusted EIA data and it took four years to build the plant, the cash flows from the dollar per MWH numbers provided by

[2] According to data request responses, Xcel explained that it uses 80% capacity factor. The cost per MWH

NSP would not come close to covering the total costs of a plant. This implies that NSP cost/MWH data used by Dr. Amit in his rebuttal testimony are not consistent with the actual ratepayer costs of a plant that would be built and operated under the adjusted EIA assumptions described above.

Q What would the cost of a new coal plant have to be in order to recover operating costs and capital costs?

A I have used the cash flows produced by annual costs per MWH together with the out of pocket costs from EIA documented above to derive the plant capital cost per kW that would cover capital costs consistent with the Burns and McDonnell financial model. This analysis demonstrates that the plant cost could only have an overnight cost of $941/kW. A cost of $941/kW is only 58% of the adjusted EIA cost of $1,615/kW that is implied in the NSP resource planning documentation. The implied $941/kW is only 38% of the estimated overnight cost of $2,461/kW Big Stone II (2006 dollars) presented by PA consulting.

Q Is it valid to compare the derived capital cost per kW with the EIA estimated cost of building a new coal plant presented in recent documents?

A No. It is well documented in this case and in other contexts that capital costs for construction of new electricity generating plants have increased by large amounts in the past year. The EIA capital cost data described above that results in a $1,615/kW overnight cost does not reflect the recent construction cost run-ups. This is highlighted by the fact that the EIA estimates for the 2006 Energy Outlook are less than 3% above the estimates in the 2005 Energy Outlook and the 2005 Energy Outlook numbers are only 3.9% above the 2004 Energy Outlook.

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numbers however seem to have spikes that represent scheduled outages of a non-generic unit.

A number of documents in this case and in the Big Stone II resource planning case confirm recent construction cost increases resulting from commodity price increases and demand pressures in the construction industry. Data presented in the Big Stone II case demonstrates that cost increases for generating options are projected to range from 35% to 87%. In order to reflect the cost of a generic coal plant using the EIA data, I have increased the EIA overnight cost estimate by 35%. This produces a cost of $2,180/kW as shown on the table below:

Adjustments to EIA Overnight Cost/kW	
Base Overnight Cost ($/kW in 2004$)	$1,213.00
Xcel Adjustment to EIA Cost from Resouce Plan	16%
Xcel Overnight Cost per kW in 2004$	$1,401.02
Years of Escalation for 2011 Commercial Operation	5
Escalation Factor at 2.5%	1.13
Escalated Overnight Cost for 2011 COD ($/kW)	$1,585.12
Factor for October Escalation	1.019
Escalated for October 2011 COD ($/kW)	$1,614.75
Factor for Recent Cost Escalation	35%
EIA Cost per kW with Recent Escalation	$2,179.91

Once the recent construction cost increases are included in the analysis, the derived capital cost of $941/kW that is consistent with covering costs is only 43% of the cost of a new plant as summarized on the table below.

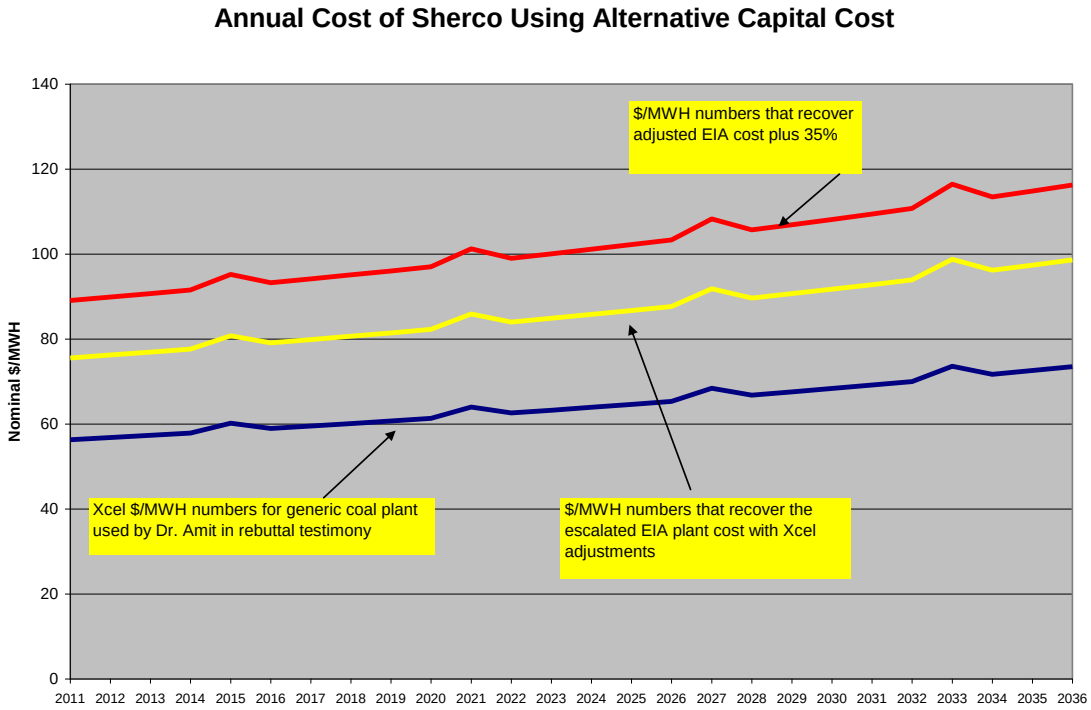
Implied Overnight Cost to Recover Costs in NSP Numbers			
		Overnight Cost/kW	Implied Cost as Pct
Implied Overnight Cost to Recover Cost	$	941.35	
EIA Cost without Recent Cost Escalation	$	1,614.75	58%
EIA Cost with 35% Factor for Cost Increase	$	2,179.91	43%
Big Stone Cost projected by PA Consulting	$	2,461.00	38%

This analysis confirms that the numbers provided by NSP to Dr. Amit that purportedly represent the cost of a new coal plant at Sherco cannot be used to make an assessment of least cost resources.

Q How much higher would the annual cost per MWH estimates used by Dr. Amit were to cover the total costs of a plant built corresponding to the EIA cost assumptions?

A Through increasing each of the annual cost/MWH numbers by the same percentage in every year, I have computed the year by year dollar per MWH that would result in cover the costs of a coal plant that costs $1,615/kW using financial assumptions in the Burns and McDonnell analysis. To do this I used an iterative process and changed the percentage increase until the annual per MWH amounts just covers the total cost of the plant. This analysis demonstrates that the nominal Sherco costs would have to increase by 33% to be internally consistent with the EIA cost data.

I have also computed the annual cost per MWH numbers that are required to cover the capital cost of a plant built with an overnight cost of $2,180/kW which is 34% above the EIA cost. This results in annual costs that are about 58% above the numbers Dr. Amit used in his rebuttal testimony as shown on the graph below:



Q How do the corrected per MWH costs that cover the cost of building a plant under EIA assumptions compare to the costs of the Mesaba PPA on a levelized basis?

A After correcting the cost per MWH numbers used by Dr. Amit in his rebuttal testimony, the real cost per MWH of Mesaba is about the same as the hypothetical new plant built on the basis of EIA data. The table below shows that the cost of Mesaba of $63.75/MWH is slightly below the cost of the hypothetical unit which is $64.01/MWH.

Summary of Mesaba versus Sherco Analysis

	Cost/MWH with Emissions			
	Levelized Nominal	Average Nominal	Levelized Real	Average Real
Mesaba: Dr. Amit Original Analysis	92.42	100.88	65.14	63.75
Sherco: Before any Adjustments	60.03	64.40	41.65	40.87
Sherco: Correction for Internal Inconsistency	80.56	86.42	55.89	54.85
Sherco: Correction for Recent Cost Escalation	94.97	101.88	65.89	64.67

IV. ADJUSTMENT OF COSTS USED IN DR. AMIT'S REBUTTAL TESTIMONY TO ACCOUNT FOR RISK DIFFERENTIALS

Q Is it appropriate to compare the cost of plants that are built and financed by utility companies with the cost of the Mesaba PPA through levelizing costs as Dr. Amit does in his rebuttal testimony?

A No. The process of levelizing costs does not account for differences in risk between different cash flow streams even if different discount rates are applied to those cash flows when the costs are levelized. To demonstrate why levelizing cost does not work in assessing projects that have different risk, assume that the cost per MWH for a plant is the same in each and every year from 2011 to 2036—say it remains at $63.75/MWH. In this case where there is no variation in cash flow, the levelized cost will always be $63.75/MWH—the same as the constant cost per MWH of $63.75/MWH—no matter what discount rate is used. If the $63.75/MWH cost is compared to another cash flow stream through levelizing costs, and the second cash flow stream is also constant, different discount rates will not capture the fact that one of the cash flow streams may be much riskier than the other.

Q How are cash flows generally adjusted for risk in measuring the value of investments?

A Any time valuations are made from estimating future cash outflows, the valuation process must account for the risk associated with the cash flow as well as the expected level of the cash flow. The traditional way to account for risk differences in valuing future cash flow is through applying a discount rate that incorporates a premium to measure the risk of the future expected cash flows. For example, if one is discounting cash flows received from holding treasury bonds, the cash flows from the bond should be discounted at the risk free rate of interest that reflects the term structure of the cash flows. However, if one is discounting the expected cash flows received from holding a large portfolio of stocks that have similar risks to the overall stock market, a higher discount rate should be used. Use of a higher discount rate will place a lower value on the expected future cash flows that are uncertain. The expected risk premium that reflects the risk aversion of investors for holding risky stocks rather than risk free bonds is one of the most actively debated issues in finance. Nowadays, typical estimates derived from large databases and complex statistical techniques derive equity market risk premiums of approximately 5%.

To illustrate familiar process of using the discount rate to reflect risk, consider a simple example where a future cash flow of $100 is expected in one year and the risk free rate is 5%. If the future cash flow has no risk, it will be have a current value of $95.24 – 100/(1.05). On the other hand, if the future cash flow

has the same risk as a typical stock, and the risk premium is 5%, then the value of that future cash flow is lower—$90.01 – 100/(1.10).

Q Does Dr. Amit recognize that ratepayers have a risk preference for paying prices in a PPA contract which are less uncertain than prices that would result from estimated costs in a self-build alternative?

A Yes. Dr. Amit argues that prices in the Mesaba PPA are too uncertain and he thinks ratepayers would be better off if even more of the costs would be fixed in today's dollars. He argues that the lot of ratepayers would be improved if O&M costs were fixed in nominal dollars; he does not like the provision of the Mesaba I PPA that allows capacity prices to vary if interest rates on treasury bonds change and he does not like the variation in the energy charges that reflect different fuel prices. While I disagree with these recommendations, through suggesting that ratepayers have a preference for costs that are fixed, Dr. Amit recognizes that the general process of fixing prices does reduce ratepayer risk. Through arguing to change the risk profile of the PPA so that more costs are fixed for ratepayers, he is also recognizing that the reduced risk has value to ratepayers. NSP makes similar arguments that it would be better off if more of the PPA costs were fixed thereby implying that it is better off if costs are fixed rather than uncertain.

Q Are there examples outside the electricity industry that demonstrate residential and business consumers would rather incur fixed prices for goods and services rather than uncertain prices?

A Yes, there are very many. If residential consumers live on fixed incomes or they have fixed salaries, then they clearly prefer that their monthly expenses

are also fixed. Similarly, businesses can reduce the volatility of their cash flows by fixing their costs. For example, in the past couple of years, the profitability of some airline companies has been hampered by volatility in the price of jet fuel. On the other hand, by fixing much of its fuel price through forward contracts, Southwest Airlines was able to mitigate the fuel price risk and improve its credit quality. Another example of the preference for fixed rather than uncertain input prices is interest rates. Given a choice, both businesses consumers and residential consumers generally prefer to make fixed interest payments than to incur the uncertainty associated with varying payments. This is confirmed by the fact that interest rates on long-term fixed rate debt are generally higher than the rates on variable rate debt. Since 1980, the premium the consumers have been willing to pay for 10-year fixed rate debt versus 3-month debt is 1.79% relative to short-term debt with variable interest rates.

Q How can one measure the value to ratepayers from lower risk because of fixed prices in the Mesaba PPA relative to uncertain estimated costs for a hypothetical new plant at the Sherco site?

A I demonstrated above that if ratepayer value is measured through levelizing the future costs, the discount rate will not capture differences in risk. This means other approaches must be used to evaluate which resource has a lower cost. Therefore, instead of applying levelized costs to assess value, one must use the standard valuation procedure of discounting future cash flows.

When discounting future revenues to assess the value of Mesaba versus an alternative coal plant, two issues arise. First, the alternative plants are assumed to

operate at different capacity factors than Mesaba. This means that the present value of total dollar costs cannot be directly compared because there is different energy production associated with the alternatives. In accounting for differences in the capacity factor among plants, one can divide the present value of the revenues by the total lifetime generation of each plant to derive the present value per MWH.

The second issue involves the discounting process. Since electric bills are cash outflows rather than cash inflows from the perspective of ratepayers, the risk premium must be subtracted from discount rate instead of added to the discount rate. In cases where cost outflows rather than revenue inflows are valued, the risk premium associated with riskier future cash flows should be subtracted from the discount rate rather than added to the discount rate.

To illustrate this latter point, consider the simple example of two $100 future cash flows that occur in one year which was introduced above. However, now rather than assuming the cash flows are inflows to investors, assume that the $100 cash flows are instead outflows paid by consumers for electricity. As with the example of cash inflows above, assume that in one scenario the cash inflow is fixed and risk free and in the other scenario the cash inflow is risky. In this example, the risky cash flow should have a higher cost than the risk free fixed cost. The valuation can be accomplished either by subtracting the risk premium from the risky cash outflow or by adding the risk premium to the fixed cash flow. If the risk premium is 5%, then the differential value between the risky cash flow and the risk free fixed outflow is about $5.

Q Does finance literature explain the notion of subtracting rather than adding risk premiums when cash outflows are measured?

A Yes. This proposition is summarized by Brigham and Gapenski (1993) as follows:

"If we want to penalize a cash outflow for higher-than-average risk, then the outflow must have a higher present value, not a lower value. Therefore a cash outflow that has a higher-than-average risk must be evaluated with a lower-than-average cost of capital."

Q How do different risk premiums affect the relative value of the Mesaba PPA and the estimated annual costs of a new NSP coal plant?

A For both the Mesaba PPA and the corrected NSP new plant costs, I have computed the present value of revenues divided by the aggregate lifetime generation. I computed these costs using the same 7.95% discount rate that I applied in my earlier rebuttal testimony. Next, to recognize that the Mesaba PPA has lower risk than the estimated uncertain costs in a self-build scenario, I have applied alternative risk premiums to the Mesaba cost numbers so as to reflect the fact that those costs have less uncertainty than the self-build costs. I have made the computations using risk premia ranging from 0% to 3.5% in the table below.

The table shows that if the there were no differential risk premium for Mesaba, the value of Mesaba and the corrected cost/MWH cost stream from NSP are about the same. However, once a risk premium is introduced to recognize the value received by ratepayers from having lower uncertainty due to the construction over-run risk, the construction delay risk, the plant performance risk,

the availability risk, the O&M expense risk, the future cost of capital risk and other factors, the cost of Mesaba is reduced relative to the self-build alternative. The table shows that small changes in the risk premium can have large effects on the value to Mesaba for ratepayers. If a 3.5% risk premium is applied to the Mesaba cash flows, then Mesaba has a 27% lower cost than the NSP self-build scenario.

PV of Revenue/Generation			
Risk Premium	West Range 603 MW	Sherco Revised	Mesaba as Pct of Sherco
0.0%	42.59	43.96	96.87%
0.5%	40.79	43.96	92.79%
1.0%	39.12	43.96	88.99%
1.5%	37.56	43.96	85.44%
2.0%	36.10	43.96	82.12%
2.5%	34.73	43.96	79.01%
3.0%	33.45	43.96	76.09%
3.5%	32.25	43.96	73.36%

PV of Revenue/Generation			
Risk Premium	West Range 603 MW	Sherco Revised	Mesaba as Pct of Sherco
0.0%	42.59	43.96	96.87%
0.5%	40.79	43.96	92.79%
1.0%	39.12	43.96	88.99%
1.5%	37.56	43.96	85.44%
2.0%	36.10	43.96	82.12%
2.5%	34.73	43.96	79.01%
3.0%	33.45	43.96	76.09%
3.5%	32.25	43.96	73.36%
4.0%	31.12	43.96	70.79%
4.5%	30.06	43.96	68.37%
5.0%	29.06	43.96	66.09%
5.5%	28.11	43.96	63.95%
6.0%	27.22	43.96	61.92%
6.5%	26.38	43.96	60.01%
7.0%	25.59	43.96	58.20%

[Based on comments below – we think this table should be expanded to [7%] – please see rationale below. I am worried that this may be somewhat of a stretch]

Q What are some issues regarding how to evaluate the risk premium from the perspective of ratepayers when valuing cash flow for Mesaba and self-build options?

A Unfortunately, as with many other problems in measuring risk, determining the appropriate risk premium to apply to Mesaba PPA prices versus a utility financed self-build option when considering uncertainty from a ratepayer perspective is not an easy question. In addition to the general arguments about how risk should be measured for valuation of investments, the problem is compounded because we do not know the level of uncertainty associated with utility self-build plants from the perspective of ratepayers.

One way to consider the issues is to use the analogy of merchant power plants. Since ratepayers incur virtually all of the risk in the self-build case, their position is similar to the position of investors in a merchant plant. If the merchant analogy is applied to measuring risk premiums, then the risk premiums applied from a ratepayer perspective to the self-build case would be similar to the risk premium that investors use in valuing merchant cash flows.

From a ratepayer perspective, cash flows in the PPA scenario are not risk free, but these cash flows have lower uncertainty than cash flows in the self-build scenario. Once the PPA is signed and construction begins, ratepayers would not experience volatility in cash flow associated with capital costs, plant delays and

they would experience no volatility in the price paid per MWH due to variations in plant availability (due to the proportional reduction in the capacity payment) and very small volatility in O&M expense, the risk premium should be lower than the self-build case. Coal price volatility has a much smaller impact than natural gas volatility, so both alternatives would have a reduced risk premium to ratepayers as compared to gas-fired generation.

Q What are alternative ways to measure the risk premium from a ratepayer perspective when valuing cash flow for Mesaba relative to utility self-build options?

A There are three general approaches that could be used in determining the risk premium from a ratepayer perspective. While none of the approaches can be easily applied in measuring ratepayer risk for a PPA contract relative to the self-build alternative, each readily illustrates the fact that risks are routinely ascribed value by the marketplace:

- First, one could attempt to directly estimate the risk premium using financial market theory and stock market data. This is similar to attempting to measure the beta of a stock in estimating the cost of capital.
- Second, one could attempt to derive relative risks of alternative investments through evaluating how lenders to a project assess risks.
- Third, one could directly measure risk using contract premiums that convert risky cash flows into risk free cash flows using a valuation method known as risk neutral valuation.

Q Discuss the first technique in which the premiums are directly measured using capital market theory.

A Using the first technique, one could make a judgment about the level of risk relative to other risky propositions through adjusting an overall equity market risk premium using the classic Capital Asset Pricing Model ("CAPM"). Say the overall risk premium for typical stocks is 5% as described above. One could then assess the risk of Mesaba PPA relative to the overall 5% premium and then compare this risk to the risk relative to the overall premium of the self-build alternative.

The self-build option clearly has more risks. It is reasonable to assume that the incurring all of the development, construction, and operating risks associated with a new base load coal plant yields a risk premium as large as the overall risk premium associated with investing in a large portfolio of stocks – 5%. On the other hand, locking in the cost of power under a PPA, subject only to adjustment based on the small proportion of the price associated with the fuel and variable costs, would have a very small premium associated with it.

Q Discuss the second technique for measuring the risk premium -- the debt capacity approach.

A The debt capacity method for computing differential risk premia demonstrates that a significant risk premium exists for accepting the full risks of a power plant, but it is very difficult to apply in practice because of data limitations. If a project has more risk, it will have to incur higher credit spreads and it will have less debt capacity. Consider two projects from the perspective of a bank

lending money. In one case, the bank must accept all of the construction cost over-run, construction delay, plant availability, fuel price and O&M risks. This loan is analogous to the utility self build option from a ratepayer perspective. If the loan was for more than 50% of a project, the loan may well be rated below investment grade. In a second case, assume the bank only accepts fuel risk. The second loan is representative of the PPA scenario. Here, a loan against 50% of a project may well be above investment grade.

The first loan in which the multitudes of risks are accepted is obviously much riskier than the loan in which only fuel price risk is accepted. The bank would reflect this risk in the credit spreads it charges and/or the amount of debt it would lend to a project. For example, the credit spread associated with a very low grade loan may be 2% to 5% greater than the credit spread of a high grade loan. [ED – BECAUSE OF THE ISSUES RELATED OT OUR TESTIMONY ON IMPUTED DEBT – AND THE FACT THAT XCEL IS BBB- AND COULD 'FALL OFF THE CLIFF' – I DON'T WANT YOU TO BE ON THE RECORD SAYING CREDIT SPREADS ARE THAT LARGE, WHEN THE DROP FROM BBB- TO JUST BB+ IS NOT THAT HIGH. While translation of risks into a specific risk premium is difficult, it is clear that the first loan carries higher risks than the second loan.

Q Discuss the third technique for measuring the risk premium, the risk neutral approach.

A As with the debt capacity method, the risk neutral approach is interesting in theory but difficult to apply in this case because of the limited amount of

market data on project financing of base load plants. The risk neutral method involves directly measuring risk through analyzing the costs that are incurred to transfer risk that is part of the project finance process. A utility self-build plant could transfer risks away from ratepayers through writing a series of contracts with entities that provide construction, O&M and financial services. For example, in accepting the risk of construction delays, a contractor can be paid to accept the risk through liquidated damage provisions. Similarly, the construction firm can be paid to accept the risk of cost over-runs and plant performance risk. Contracts can also be written for O&M services so that the provider accepts O&M risk. Interest rate swap contracts could be put in place to transfer the interest rate risk to the swap counter party.

Once all of the contracts were in place for the self-build case, one could add up all of the premiums paid by the utility to transfer risk relative to the costs that would be incurred if there were no risk transferring contracts. Then, all of the contract premiums could be summed and added to the self-build scenario in which costs are uncertain. The problem with this method is the difficulty in computing all of the contract versus cost-plus differentials. One thing is certain however, the cost of a utility company entering into all of these contracts to mitigate ratepayer risk would add significant amounts to the overall cost of a project.

Q Given the various approaches to measuring risk premium what is a reasonable range to apply in measuring the risk of Mesaba relative to a utility financed plant?

A Anytime one puts a number on risk, a range should be applied rather than suggesting that a single number is correct. Given the limited market data on ratepayer uncertainty associated with base load plants, I believe a range of 1.5% to 3% is reasonable. This premium addresses the issue of ratepayer uncertainty relating to the direct cost of power under any PPA; it does not quantify the real options available to ratepayers from the Mesaba IGCC plant relative to an alternative coal plant. These include the ability to meet tightening emission limits and to respond to carbon constraints. Inclusion of real options would significantly increase the value of Mesaba relative to the pulverized coal plants given the lower cost of carbon sequestration for an IGCC plant relative to the costs experienced by a pulverized coal unit. The maximum value of the option could be measured as the differential cost between sequestration for an IGCC plant and a pulverized coal plant. The minimum value of the option is nothing in a case where carbon emissions are irrelevant. The range between the minimum value and the maximum value depends on the probability carbon emissions being regulated. [I THINK IT MAY BE TOO MUCH OF A STRETCH TO ADD THE OPTION VALUE TO THE RISK PREMIUM].

Q What is the ratepayer cost of Mesaba relative to Big Stone II, the hypothetical NSP plant and the Fluor coal plant if the risk premium range is applied?

A The ratepayer costs of Mesaba relative to the alternative pulverized coal units are shown in the table below:

PV of Revenue/Generation							
Risk Premium	West Range 603 MW	Big Stone II Revised	Sherco Revised	Fluor	Mesaba as Pct of Big Stone	Mesaba as Pct of Sherco	Mesaba as Pct of Flour
0.0%	42.59	44.58	43.96	45.21	95.52%	96.87%	94.19%
0.5%	40.79	44.58	43.96	45.21	91.50%	92.79%	90.23%
1.0%	39.12	44.58	43.96	45.21	87.75%	88.99%	86.53%
1.5%	37.56	44.58	43.96	45.21	84.25%	85.44%	83.08%
2.0%	36.10	44.58	43.96	45.21	80.97%	82.12%	79.85%
2.5%	34.73	44.58	43.96	45.21	77.91%	79.01%	76.82%
3.0%	33.45	44.58	43.96	45.21	75.03%	76.09%	73.99%
3.5%	32.25	44.58	43.96	45.21	72.33%	73.36%	71.33%

PV of Revenue/Generation							
Risk Premium	West Range 603 MW	Big Stone II Revised	Sherco Revised	Fluor	Mesaba as Pct of Big Stone	Mesaba as Pct of Sherco	Mesaba as Pct of Flour
0.0%	42.59	44.58	43.96	45.21	95.52%	96.87%	94.19%
0.5%	40.79	44.58	43.96	45.21	91.50%	92.79%	90.23%
1.0%	39.12	44.58	43.96	45.21	87.75%	88.99%	86.53%
1.5%	37.56	44.58	43.96	45.21	84.25%	85.44%	83.08%
2.0%	36.10	44.58	43.96	45.21	80.97%	82.12%	79.85%
2.5%	34.73	44.58	43.96	45.21	77.91%	79.01%	76.82%
3.0%	33.45	44.58	43.96	45.21	75.03%	76.09%	73.99%
3.5%	32.25	44.58	43.96	45.21	72.33%	73.36%	71.33%
4.0%	31.12	44.58	43.96	45.21	69.80%	70.79%	68.83%
4.5%	30.06	44.58	43.96	45.21	67.41%	68.37%	66.48%
5.0%	29.06	44.58	43.96	45.21	65.17%	66.09%	64.26%
5.5%	28.11	44.58	43.96	45.21	63.06%	63.95%	62.18%
6.0%	27.22	44.58	43.96	45.21	61.06%	61.92%	60.21%
6.5%	26.38	44.58	43.96	45.21	59.17%	60.01%	58.35%
7.0%	25.59	44.58	43.96	45.21	57.39%	58.20%	56.59%

This risk analysis illustrates that given that Mesaba's cost of power is comparable to the other alternatives (ignoring the risk profiles of the two alternatives), Mesaba is preferable if it assumes *any* risks that would be borne by

ratepayers in the utility alternatives. The suggestions of Dr. Amit, and various parties, that the Mesaba Project should assume even more risks than it already does under the PPA, in order to be preferable to the utility built alternatives, are not based on sound economic principles.

V. DR. AMIT'S SUGGESTED CONTRACT REVISIONS

Q Do you agree with Dr. Amit's comments regarding risk allocation in the Mesaba PPA?

A No. Dr. Amit's testifies that various provisions in the PPA between Mesaba and NSP should be revised. These provisions include the method to reduce the capacity charges when the plant operates on natural gas; the basis for computing energy charges; the variable O&M charges and the fixed operation and maintenance charges. He also suggests that the one-time adjustment to the capacity charge for changes in the interest rate on Treasury Bonds is bad for ratepayers.

Q Is Dr. Amit correct with respect to his comments on how the capacity charge changes when Mesaba runs on natural gas?

A No. Dr. Amit testifies that:

> [T]he adjustment of capacity payments, as described in Article 8.1 of the PPA, applies only when the facility can only operate using 100 percent natural gas. Therefore, the adjustment of capacity payment as provided in Article 8.1 of the PPA does not apply if the fuel mix is anything less than 100 percent natural gas (such as 99 percent natural gas). . . . [I]f a significant amount of natural gas is used in the facility, Xcel and Xcel's ratepayers would be forced to pay for more expensive energy, when cheaper energy may be available. Such a situation represents an inappropriate shift of risk away from Excelsior to NSP and NSP's ratepayers. Rebuttal Testimony of Eilon Amit, at 9.

This testimony is incorrect on three counts. First, Dr. Amit's testimony does not reflect the modifications to the Mesaba I PPA language that were submitted by Mr. Thomas L. Osteraas in his rebuttal testimony. Second, the statement that ratepayers are forced to pay for more expensive energy wrongly implies that the Mesaba would be dispatched by NSP on an uneconomic basis. Third, the premise of Dr. Amit's analysis, that Mesaba's ability to run on natural gas is costly, is wrong.

Q Explain why Dr. Amit does not correctly reflect the PPA with respect to capacity charges when the plant operates on natural gas.

A In his rebuttal testimony, Mr. Osteraas explained that the PPA contract will be revised and that the new contract will "reflect the total amount of available energy during the month generated using syngas from solid fuel, resulting in an automatic reduction in the monthly capacity payment based upon the amount of natural gas used to generate energy under the contract." The new contract provisions resolve the gas price issues raised by Dr. Amit.

Q Comment on Dr. Amit's statement that "Xcel's ratepayers would be forced to pay for more expensive energy, when cheaper energy may be available."

A This assertion is wrong. If Mesaba cannot run on coal, then NSP has the option to dispatch the plant based upon running natural gas at the merit order. In this situation, NSP would only dispatch the plant when the marginal cost of energy in the region is higher than the variable cost of running Mesaba. When the plant is operated on natural gas, the dispatch of Mesaba would provide value to ratepayers and defray the cost of even more expensive energy. The option to run

on natural gas and offset high energy costs adds value to ratepayers that is not accounted for in the comparison to the pulverized coal plant. This added value does not exist for a pulverized coal plant because when a pulverized coal plant is down for maintenance, it cannot provide any energy at all to provided capacity to ratepayers. The option to run on natural gas plus the penalty that Excelsior experiences—in the form of a drastically reduced capacity payment—when the plant cannot operate on coal, should properly be included as an added benefit to Mesaba over and above the cost of a comparable pulverized coal plant.

Q Comment on Dr. Amit's testimony with respect to inflation risk in the O&M provisions of the contract?

A Dr. Amit suggests that "inflation risk" should be shared by Excelsior and ratepayers. He makes the following statements in his testimony:

> First, the inflation risk should be shared by Excelsior and Xcel and its ratepayers and should not be fully born [sic.] by Xcel and its ratepayers.
>
> * * *
>
> The fixed O&M will be adjusted annually by the same inflation index as the Variable O&M and is also subject to change, per Excelsior's decision, every five years starting from the first year of commercial operation. Therefore, as I previously discussed regarding the variable O&M, the risk of higher cost Fixed O&M is fully born [sic.] by Xcel and Xcel's ratepayers. Rebuttal Testimony of Eilon Amit, at 12–13.

Dr. Amit's comments with respect to inflation risk are not consistent with economic principles because, in theory, ratepayer risk should be measured in real rather than in nominal dollars. To demonstrate problems with Dr. Amit's analysis, consider a scenario where ratepayers do not take inflation risk and the

inflation rate for O&M expenses is fixed in advance at 2.5%. In this case if the actual inflation rate turns out to be zero while the locked-in inflation rate in the is PPA 2.5%, then ratepayers would pay more than necessary for the O&M expense. With lower inflation than is established in the contract, Mesaba would realize a windfall and ratepayers would incur a loss in real terms relative to the price they pay for other goods and services. On the other hand, if inflation increases to 5% and the fixed inflation rate in the contract is 2.5%, ratepayers would experience a windfall. If the current O&M provision were in place, ratepayers would pay a higher O&M cost because of the higher inflation rate, but the higher nominal cost should be evaluated in the context of higher salaries and other goods and services in the economy.

Dr. Amit's suggestion would be expensive to ratepayers because the unnecessary transfer of the risk would have a cost to ratepayers. To illustrate this consider a scenario in which a project developer signs a contractor with an O&M contractor to provide O&M services. If the developer would pay an O&M contractor to fix O&M expenses in nominal dollars rather than in real dollars, it would have to pay a premium for a contractor to fix the price and that premium would have no value to ratepayers in terms of real risk reduction. The increased payment to fix O&M in nominal rather than real terms is simply not good public policy.

Q Comment on Dr. Amit's testimony with respect to potential changes in the O&M tariffs in the PPA contract?

A Dr. Amit is mistaken in his interpretation of the PPA contract. As Mr. Osteraas explain in his rebuttal testimony:

> There is no obligation on the part of either party to agree to a change in these [O&M] prices, so any actual changes to those prices would have to be made by formal amendment of the PPA. Section 10.5(A) is clear that the Operating Committee itself does not have the authority to modify the terms and conditions of the contract. Rebuttal Testimony of Thomas L. Osteraas, at 28.

Q Comment on Dr. Amit's testimony with respect to adjustments in capacity charges for the 10 year treasury index?

A Dr. Amit notes that if treasury bond yield changes, then ratepayers could be exposed to higher prices:

> The Capacity Price Component (CP) of the monthly capacity charge is proposed to be adjusted by the 10 year treasury index upon final certification of the EPC. Such certification may not happen prior to 2008. Rebuttal Testimony of Eilon Amit, at 11.

The complaint has no merit. If interest rates fall prior to the date they are locked in by the Project, this benefits ratepayers. Requiring the Project to hedge interest rates today under the PPA would result in a higher tariff, or a project that is not feasible in the event that interest rates rise significantly. Given the capital intensity of base load projects and long lead-times, this is not a feasible approach. Dr. Amit also fails to recognize that the PPA provides very significant protection from interest rate fluctuations for the entire life of the PPA. The PPA provides that once construction starts, the tariff is fixed and not subject to adjustment for interest rate changes for the entire four years of construction and 25 year term of sales under the PPA.

VI. DR. AMIT'S SUGGESTION TO DE-LINK THE ENERGY CHARGE FROM ACTUAL ENERGY COSTS INCURRED BY MESABA

Q Does Dr. Amit suggest a energy charge that is different from the fuel cost experienced by Mesaba?

A Yes. Dr. Amit states:

> I recommend that the first paragraph of Article 8.3 be amended as follows. Use the following language: "Regardless of the actual fuel mix used in the facility, NSP shall pay seller monthly for fuel as if the fuel mix used in the facility is 75 percent PRB Coal and 25 percent Pet Coke blend." Delete the following language: "NSP shall pay seller monthly for all fuel (solid fuel and natural gas) consumed at the facility." Rebuttal Testimony of Eilon Amit, at 9.

Q What is the main problem with Dr. Amit's suggestion?

A Dr. Amit's statement would ignore Mesaba's actual place in the merit order for dispatch, especially when running on natural gas, and would require the Project to establish very large reserve accounts that would drive up the cost of energy under the PPA. De-linking energy charges and energy costs would not provide a corresponding benefit to ratepayers, because it would result in uneconomic dispatch and the Project paying to run the plant on natural gas during hours that it is inefficient to do so. For example, if the natural gas price is $7/MMBTU and the plant is dispatched on the basis of a $1.4/MMBTU coal cost, somebody has to pay for the cost of not operating plants on an economically efficient basis. In economic parlance, Dr. Amit's proposal creates a deadweight loss.

Dr. Amit's suggestion would have the effect of unfairly penalizing the IGCC alternative for the *benefit* it provides ratepayers in the form of back-up

power from the combined cycle power plant that is not available from a pulverized coal plant, by *requiring* that the plant run on natural gas when more economical resources are at the margin. The PPA as drafted creates the proper situation where the plant is properly dispatched according to the merit order at all times, and at the same time, Mesaba is paid a substantially reduced capacity component when supplying natural gas capacity .

Q Are there other examples in the industry where the provision of energy charges different from actual energy costs has caused problems?

A Yes. In Michigan, the MCV natural gas plant was dispatched on the basis of coal prices rather than gas prices. The uneconomic dispatch created by dispatching a gas plant using coal prices became unsustainable when gas prices increased and the contract had to be renegotiated.

IV. DR. AMIT'S ANALYSIS OF DIFFERENTIAL TRANSMISSION COSTS BETWEEN MESABA AND UNITS CONSTRUCTED AT AN EXISTING SITE

Q Is the comparison that Dr. Amit makes between the transmission cost for Mesaba and the transmission cost at alternative sites that have existing plants appropriate?

A No. Dr. Amit states that:

> The costs may be born [sic.] by Xcel's ratepayers and other users of the MISO transmission system. The exact allocation of these costs would depend on the type of transmission services ultimately received by Excelsior, and the MISO policies at the time the services are provided. However, regardless of the cost allocation of the transmission upgrades, all of these costs should be fully considered by the Commission in this proceeding since these costs are relevant factors in the Commission's decisions in this proceeding, as the Commission has already indicated. Rebuttal Testimony of Eilon Amit, at 6.

I do not dispute that the Commission should consider transmission costs in evaluating which resource has the lowest cost. However, in considering transmission costs, the basis for the evaluation must not be the expansion plant of an existing site. The reason this analysis is wrong is based on the same arguments I made in my rebuttal testimony with respect to comparing the costs of a plant without an existing site and the cost of a plant that is an additional unit at a site. These arguments include:

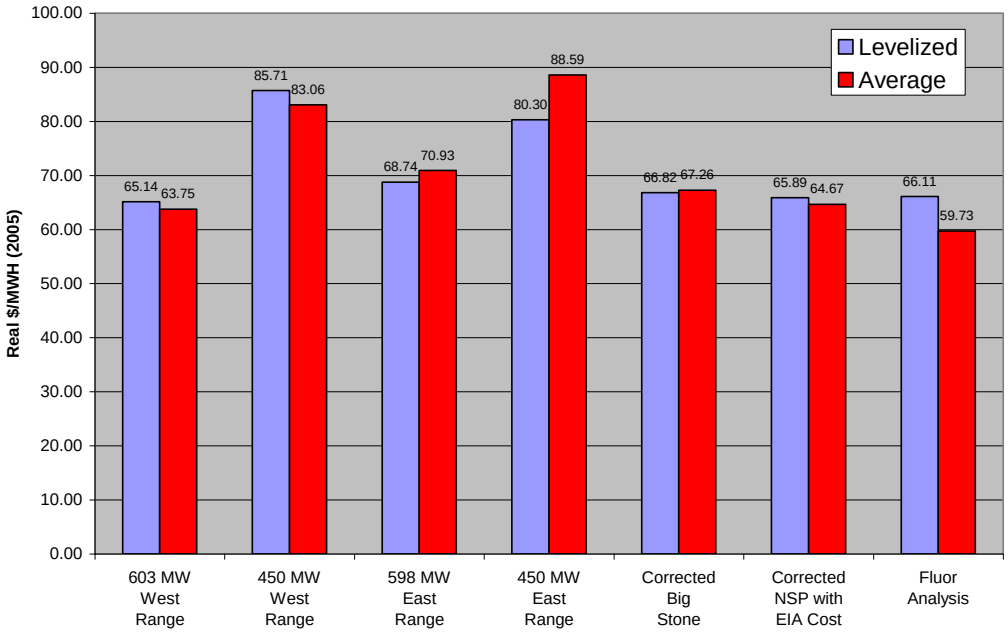
- If units with existing transmission facilities were used as the standard against which all other resources are measured, no new environmentally beneficial resources would be added in Minnesota, or any other state because these resources do not have existing transmission facilities.
- Sites that have existing transmission facilities are a scarce resource with significant value. However, the type of analysis prepared by Dr. Amit attributes no transfer costs for the use of a site with existing transmission.
- Taken to the extreme, the comparison of sites that already have transmission facilities with sites that do not would lead to every new plant being built at one site—ultimately there could be twenty plants at Big Stone and fifteen plants at Sherco. Limits on land availability and diseconomies of scale dictate that this of course will not happen.
- The Mesaba site is planned to be large enough for two units. In theory, the value of the real option to build a second unit and use transmission facilities should be attributed to Mesaba.

IV. DR. AMIT'S ANALYSIS OF A 450 MW PPA

Q Is the analysis made by Dr. Amit of a 450 MW PPA relevant to the least cost planning process?

A No. The optimal size of the Mesaba plant is 603MW. It would not be in the public interest to limit the size of the plant to a sub-optimal level. I have quantified the ratepayer cost of the 450 MW East, the 450 MW West, and 598 MW East proposals. This analysis shows the real levelized and average prices and also includes the costs of the Mesaba, Fluor and Big Stone alternatives.

Corrected Cost of Mesaba versus Alternative Plants w/o Externalities Using Real Dollars and a Real Discount Rate of 5.32% to Levelize



VII. CONCLUSIONS

Q What are the overall conclusions you reach in this testimony?

A My overall conclusion is that when all costs are fully accounted for, the cost of power from Mesaba I is roughly the same as what the cost of power would

be from Big Stone II or a conventional coal unit at Sherco. Mesaba's cost advantage grows once the allocated costs, environmental benefits, recent increases in capital cost, options, first of kind costs, and risks are put on an equal footing. My analysis demonstrates that the Mesaba plant and its IGCC technology is currently a least cost resource for residents and businesses in the State of Minnesota. Applying even a 3.5% risk premium differential between a utility-built conventional coal plant and the Mesaba 1 PPA with the real options of IGCC, the Mesaba cost of energy is 30% less than the utility coal alternatives on a risk-adjusted basis.

Q Does this conclude your prepared surrebuttal testimony?

A Yes.